



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,813	02/20/2004	Tutomu Ikeda	04022	3953

23338 7590 03/21/2006

DENNISON, SCHULTZ, DOUGHERTY & MACDONALD
1727 KING STREET
SUITE 105
ALEXANDRIA, VA 22314

EXAMINER

WHITTINGTON, KENNETH

ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No. 10/781,813	Applicant(s) IKEDA ET AL.	
	Examiner Kenneth J. Whittington	Art Unit 2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.



Bot Ledynh
Primary Examiner

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2862

DETAILED ACTION

The Amendment filed January 23, 2006 has been entered and considered.

Response to Arguments

6 Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection outlined below.

Claim Rejections - 35 USC § 102

12 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

18 (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English
24 language.

Claims 1-10, 14-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hamaoka et al. (US 6,356,073), hereinafter Hamaoka. Regarding claims 1 and 16, Hamaoka discloses a rotary position sensor comprising:

30 a magnet support (See Hamaoka FIGS. 6-7, item 24);

Art Unit: 2862

at least two magnets attached to the magnet support symmetrically arranged about the center of rotation, so that the magnets produce a uniform magnetic field across a center of rotation (See FIGS. 6-7, items 39 and col. 3, lines 9-42);

6 a sensor disposed within the magnetic field and arranged and constructed to detect a change of direction of the magnetic field as the magnets and sensor rotate relative to each other (See FIGS. 6-7, item 31);

wherein the sensor outputs signals representing a relative rotational angle (See col. 3, line 50 to col. 4, line 28).

12 Regarding claim 2, Hamaoka discloses the at least two magnets are disposed substantially symmetrically with respect to the center of rotation (See FIGS. 6-7, items 39).

Regarding claims 3 and 17, Hamaoka discloses the sensor is positioned substantially at the center of rotation (See FIGS. 6-7, item 31).

18 Regarding claim 4, Hamaoka discloses the magnet support comprises a substantially tubular member, and the at least two magnets are attached to an inner peripheral surface of the tubular member, and the substantially tubular member has a central axis along the center of rotation (See FIGS. 6-7, items 24 and 39).

Art Unit: 2862

Regarding claim 5, Hamaoka discloses the magnets are magnetized to produce a substantially uniform magnetic field that intersects the sensor, and wherein the substantially uniform magnetic field can be represented by substantially parallel, unidirectional, magnetic field lines intersecting the sensor (See FIGS. 6-7, note the polarity of the magnets would produce parallel lines through the space between them).

Regarding claim 6, 7, 8, 9 and 10, Hamaoka discloses each of the magnets has an arc-shaped configuration along a circumferential direction of the tubular member, the magnets have a uniform thickness in the radial direction of the tubular member, have opposite ends along the circumferential direction, the end surfaces on the inner side of the tubular member, and the end surfaces comprises a first surface and a second surface that are respectively substantially aligned with a direction of the magnetic field and substantially aligned perpendicular to the direction of the magnetic field (See FIGS. 6-7, items 39).

Regarding claim 11, Hamaoka discloses the magnets extend along an angle measured about the center of rotation, determined such that an error is less than a predetermined value (See FIGS. 6-7, note that the magnets are formed to create a uniform magnetic field therebetween, see col. 3, lines 10-42, which has

Art Unit: 2862

the effect of reducing error associated with off center locations of the sensor).

Regarding claim 15, Hamaoka discloses the Hall IC in the embodiments can be exchanged with a magneto resistance element (See col. 8, lines 45-55).

6 Regarding claim 18, Hamaoka discloses the magnets having opposite end surfaces along the circumferential direction, and wherein each of the end surfaces comprises a first surface and a second surface that intersect with each other and are respectively inclined relative to an inner circumferential surface and an outer circumferential surface of each of the
12 magnets by obtuse angles (See FIGS. 6-7, items 39).

Regarding claim 19, Hamaoka discloses the magnets having opposite end surfaces along the circumferential direction, and wherein each of the end surfaces is substantially orthogonal to an outer circumferential surface of each of the magnets (See FIGS. 6-7, items 39).

18

Claims 1-3, 11, 12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Schroeder et al. (US 6,614,223), hereinafter Schroeder. Regarding claims 1-3, Schroeder discloses a rotary position sensor comprising:

a magnet support (See Schroeder FIG. 4, item 114);

Art Unit: 2862

at least two magnets attached to the magnet support symmetrically arranged about the center of rotation, so that the magnets produce a uniform magnetic field across a center of rotation (See FIG. 4, items 112 and note field emanating therefrom);

6 a sensor disposed within the magnetic field on or near the center of rotation and arranged and constructed to detect a change of direction of the magnetic field as the magnets and sensor rotate relative to each other (See FIG. 4, item 12);

wherein the sensor outputs signals representing a relative rotational angle (See col. 2, lines 22-28).

12 Regarding claim 11; Schroeder discloses the magnets extending along an angle measured about the center of rotation, and wherein the angle is determined such that an error of the output signal from the sensor due to an offset of a location of the sensor away from the center of rotation is less than a predetermined value (See col. 2, lines 5-19 and col. 4, line 62
18 to col. 5, line 27, note that to overcome the error associated with the offset from center sensor, a uniform field must be created between the magnets in the region of the sensor, such field encompasses the sensor body in both a center position or offset therefrom).

Art Unit: 2862

Regarding claim 12, Schroeder discloses the angle is determined based on factors comprising a maximum offset distance tolerance of the sensor from the center of rotation, the material of the magnets, and a thickness of each of the magnets in a radial direction about the center of rotation (See col. 4, line 62 to col. 6, line 20, note the shape and thickness factor into the uniform field formation, the magnetization factors into the field formation, and the offset to which the disclosure of Schroeder is concerned is compensated by creating a uniform field covering the sensor in a maximum offset position).

Regarding claim 14, Schroeder discloses the magnets made of ferrite-based materials (See col. 4, lines 45-61).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

18 (a) A patent may not be obtained though the invention is not identically
disclosed or described as set forth in section 102 of this title, if the
differences between the subject matter sought to be patented and the prior
art are such that the subject matter as a whole would have been obvious at
the time the invention was made to a person having ordinary skill in the
art to which said subject matter pertains. Patentability shall not be
24 negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for

Art Unit: 2862

establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
- 6 3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 13 is rejected under 35 U.S.C. 103(a) as being
12 unpatentable over Schroeder. Regarding this claim, it is noted that Schroeder is concerned with making a uniform field between the magnets so that if the sensor at a specific offset from the center of rotation, it will still be in the uniform field and the errors associated therewith will be compensated. However, Schroeder does not disclose any particular offset distance.
18 Nonetheless, it would have been obvious at the time the invention was made to use the recited dimension for the offset because where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. See MPEP
2144.05II(A). Furthermore, modifying Schroeder such the maximum
24 offset has the relative dimensions recited in the claim would be obvious to one having ordinary skill in the art through routine experimentation because where the where the only difference between the prior art and the claims was a recitation of

Art Unit: 2862

relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. See *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 225 USPQ 232 (1984).

Conclusion

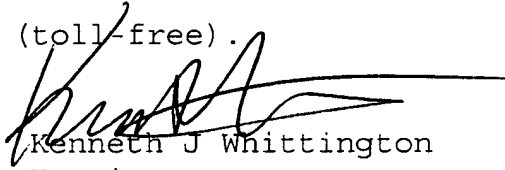
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art discloses varying designs for rotary position sensors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Whittington whose telephone number is (571) 272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2862

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kenneth J Whittington
Examiner
Art Unit 2862

12 kjw